

CLAIMS

What is claimed is:

1. An anabolic implant composition for stimulating increased rate of growth, greater amount of growth and greater feed efficiency in cattle, said composition comprising: (i) an immediate-release formulation comprising an anabolic agent, and (ii) a controlled-release formulation comprising an anabolic agent and a controlled-release agent, wherein said immediate-release formulation and said controlled-release formulation cooperate to effect said stimulation.
2. The implant composition of claim 1, wherein said immediate-release formulation and said controlled-release formulation are present respectively in a weight ratio range 1:2 to 1:25 in said composition.
3. The implant composition of claim 1, wherein said immediate-release formulation and said controlled-release formulation are present respectively in a weight ratio range 1:2 to 1:10 in said composition.
4. The implant composition of claim 1, wherein said immediate-release formulation and said controlled-release formulation are present respectively in a weight ratio range 1:3 to 1:8 in said composition.
5. The implant composition of claim 1, wherein said composition is subcutaneously injectable in said cattle.
6. The implant composition of claim 1, wherein said immediate-release formulation and said controlled-release formulation contain the same anabolic agent.
7. The implant composition of claim 1, wherein said immediate-release formulation and said controlled-release formulation contain different anabolic agents.
8. The implant composition of claim 1, wherein said anabolic agent is selected from the group consisting of zeranol, estradiol, estradiol benzoate, trenbolone, trenbolone acetate, somatotrophin, testosterone, testosterone propionate, salbutamol, progesterone, and combinations, salts and derivatives thereof.
9. The implant composition of claim 8, wherein said anabolic agent is zeranol.

10. The implant composition of claim 8, wherein said anabolic agent is trenbolone acetate.

11. The implant composition of claim 9, wherein said zeranol is the anabolic agent in both said immediate-release formulation and said controlled-release formulation and comprises from about 50 wt.% to about 95 wt.% of said composition based on a total weight percentage basis.

12. The implant composition of claim 9, wherein said zeranol is the anabolic agent in both said immediate-release formulation and said controlled-release formulation and comprises from about 60 wt.% to about 80 wt % of said composition.

13. The implant composition of claim 1, wherein said immediate-release formulation additionally contains a diluent.

14. The implant composition of claim 13, wherein said diluent is selected from the group consisting of lactose, mannitol, sorbitol, sucrose, dextrose, starches, hydrolyzed starches, and combinations thereof.

15. The implant composition of claim 14, wherein said diluent is lactose.

16. The implant composition of claim 1, wherein said controlled-release agent is selected from the group consisting of poly(D,L-lactide-co-glycolide), ethyl cellulose, methyl acrylate-methyl methacrylate copolymer, methyl cellulose, hydroxyethyl cellulose, hydroxypropylmethyl cellulose, sodium carboxymethyl cellulose, and combinations thereof.

17. The implant composition of claim 16, wherein said controlled-release agent is poly(D,L-lactide-co-glycolide).

18. The implant composition of claim 16, wherein said controlled-release agent is ethyl cellulose.

19. The implant composition of claim 1, wherein said controlled-release agent comprises from about 1.0 wt.% to about 8.0 wt.% based on the total weight of said implant composition.

20. The implant composition of claim 1, further comprising a bulking agent, binder, excipient, tableting agent, colorant and combinations thereof.

21. A method for stimulating increased rate of growth, greater amount of growth and greater feed efficiency in cattle, comprising the administration of an anabolic implant composition to said cattle which composition

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comprises: (i) an immediate-release formulation comprising an anabolic agent, and (ii) a controlled-release formulation comprising an anabolic agent and a controlled-release agent, wherein said immediate-release formulation and said controlled-release formulation cooperate to effect said stimulation.

22. The method of claim 21, wherein said immediate-release formulation and said controlled-release formulation are present in a weight ratio 1:25 in said composition.

23. The method of claim 21, wherein said administration comprises subcutaneously injecting said composition into said cattle.

24. The method of claim 21, wherein said immediate-release formulation and said controlled-release formulation contain the same anabolic agent.

25. The method of claim 21, wherein said immediate-release formulation and said controlled-release formulation contain different anabolic agents.

26. The method of claim 21, wherein said anabolic agent is selected from the group consisting of zeranol, estradiol, estradiol benzoate, trenbolone, trenbolone acetate, somatotrophin, testosterone, testosterone propionate, salbutamol, progesterone, and combinations, salts and derivatives thereof.

27. The method of claim 26, wherein said anabolic agent is zeranol.

28. The method of claim 27, wherein said zeranol is the anabolic agent in both said immediate-release formulation and said controlled-release formulation and comprises from about 50 wt.% to about 95 wt.% of said composition.

29. The method of claim 27, wherein zeranol is the anabolic agent in both said immediate-release formulation and said controlled-release formulation and comprises from about 60 wt.% to about 80 wt % of said composition.

30. The method of claim 21, wherein said immediate-release formulation additionally contains a diluent.

31. The method of claim 30, wherein said diluent is selected from the group consisting of lactose, mannitol, sorbitol, sucrose, dextrose, starches, hydrolyzed starches, and combinations thereof.

32. The method of claim 31, wherein said diluent is lactose.

5 33. The method of claim 21, wherein said controlled-release agent is selected from the group consisting of poly(D,L-lactide-co-glycolide), ethyl cellulose, methyl acrylate-methyl methacrylate copolymer, methyl cellulose, hydroxyethyl cellulose, hydroxypropylmethyl cellulose, sodium carboxymethyl cellulose, and combinations thereof.

10 34. The method of claim 33, wherein said controlled-release agent is poly(D,L-lactide-co-glycolide).

35. The method of claim 33, wherein said controlled-release agent is ethyl cellulose.

15 36. The method of claim 21, further comprising a bulking agent, binder, tableting agent, excipient, colorant and combinations thereof.

37. A method for stimulating increased rate of growth, greater amount of growth and greater feed efficiency in an animal, said process comprising:

20 (a) preparing an immediate-release formulation comprising an anabolic agent, in a first shaped object suitable for loading into a device which device is suitable for administration of said shaped object into the animal;

25 (b) preparing a controlled-release formulation comprising an anabolic agent and a controlled-release agent, in a second shaped object suitable for loading into said device in step (a), wherein said anabolic agent in step (a) and said anabolic agent in step (b) may be the same or different,

(c) loading said device with said first shaped object and said second shaped object in a ratio such that the total anabolic agent is in the 50-95 weight percent range based on the combined weight of said formulation in step (a) and said formulation in step (b); and

30 (d) administering said shaped objects into the animal, wherein said immediate-release formulation and said controlled-release formulation cooperate to effect the stimulation.

38. The method of claim 37, wherein said anabolic agent in step 9a) and step (b) is the same and is zeranol.

39. The method of claim 37, wherein said controlled-release agent in step (b) is poly(D,L-lactide-co-glycolide), ethyl cellulose, methyl acrylate-methyl methacrylate copolymer, methyl cellulose, hydroxyethyl cellulose, hydroxypropylmethyl cellulose, sodium carboxymethyl cellulose, and combinations thereof.
- 5 40. The method of claim 37, further containing lactose in step (a), step (b) or both.
41. The method of claim 37, wherein said first shaped object, or said second shaped object, or both is a tablet.
- 10 42. The method of claim 37, wherein said first shaped object, said second shaped object, or both is a pellet.